### REMARKS/ARGUMENTS

Claims 1-7, 9-27, and 29-36 are pending in the application and stand rejected.

Claims 1-7, 9-27, and 29-36 are rejected under 35 U.S.C. §103(a) as being unpatentable over United States Patent 5,774,660 to Brendel et al. (hereinafter "Brendel") in view of United States Patent 6,324,580 to Jindal et al. (hereinafter "Jindal").

Claims 1, 6, 13-15, 18-20, 23-24, 27 and 36 are amended. Support for the claim amendments can be found throughout the specification and, for example, with reference to paragraphs 73-82 and paragraphs 90-93. See also, Figs. 17, 20, and 22-29. No new matter has been added.

## I.    Claim 1

Claim 1 recites a system for optimizing data access comprising a file server and a plurality of storage elements organized into pairs for storing a plurality of files. The file server maintains file information and "when a client requests access to file information for a requested file, the file server determines a pair of storage elements for accessing the requested file, and returns to the client a first identifier of a storage element within the pair of storage elements that is to be accessed for reading data, and a second identifier of the master storage element of the pair of storage elements that is to be accessed for writing data." In addition, "data written to the master storage element is copied to the at least one mirrored storage element within each pair of storage elements." Applicants respectfully submit that the cited references, taken alone or in combination, do not teach or suggest a data access system with at least these features.

### A.  The Brendel Reference

Brendel discusses load balancing in the context of serving web pages. Incoming requests represented by URLs are received at a load balancer and forwarded on to a server. The server fulfills the requests by sending HTML pages directly to the requesting client so that the load balancer is bypassed on the return trip. See, Brendel at col. 9 ("Outgoing Data Bypasses

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Load Balancer"); Fig. 6. According to Brendel, web site content may be mirrored to prevent data unavailability. See, Brendel at col. 19, lines 15-23. In this case, the load balancer maintains a table of the locations of different files and uses the table to route incoming client requests. See, Brendel at col. 10, lines 56-59.

Brendel does not teach or suggest that the load balancer returns information to the client or that the client uses information from the load balancer to access files that have been stored in pairs of storage elements. Brendel does not disclose that the load balancer determines a pair of storage elements for accessing a requested file or that the load balancer provides the client with identifiers of storage elements within the pair to be accessed for reading and writing data. Accordingly, Brendel fails to teach or suggest the claimed "when a client requests access to file information for a requested file, the file server determines a pair of storage elements for accessing the requested file, and returns to the client a first identifier of a storage element within the pair of storage elements that is to be accessed for reading data, and a second identifier of the master storage element of the pair of storage elements that is to be accessed for writing data."

Brendel also fails to disclose use of the identifiers to access the requested file. Unlike the claimed invention, Brendel's load balancer simply forwards client requests to the selected server for processing. Thus, Brendel does not teach or suggest that the claimed "client initiates I/O operations with the pair of storage elements absent the file server." Moreover, Brendel fails to disclose that "write operations by the client are made using the first identifier and read operations by the client are made using the second identifier" nor does Brendel disclose that "data written to the master storage element is copied to the at least one mirrored storage element within each pair of storage elements" as claimed.

B. The Jindal Reference

Jindal discusses a domain name server used to perform policy-based load balancing. A client submits a request to the DNS server using a virtual name. The DNS server reads a "zone file" to determine which server meets certain policy-based criteria. The DNS server then responds to the client by providing a network address of the preferred server. See, Jindal at col. 5, lines 48-56.

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Jindal thus fails to cure Brendel's deficiencies as previously discussed. Specifically, Jindal does not teach or suggest that the DNS server selects a <u>pair</u> of storage elements to be accessed or that the DNS server returns identifiers of storage elements <u>within the selected pair</u> to the client for use in reading and writing data. Jindal therefore does not disclose "when a client requests access to file information for a requested file, the file server determines a pair of storage elements for accessing the requested file, and returns to the client a first identifier of a storage element within the pair of storage elements that is to be accessed for reading data, and a second identifier of the master storage element of the pair of storage elements that is to be accessed for writing data" as claimed.

Jindal likewise does not teach or suggest that "write operations by the client are made using the first identifier and read operations by the client are made using the second identifier" or that "data written to the master storage element is copied to the at least one mirrored storage element within each pair of storage elements." Accordingly, Brendel in view of Jindal fails to teach or suggest each and every element of the claimed invention. Applicants respectfully submit that the combined references do not support a prima facie case of obviousness and request reconsideration and allowance of claim 1.

## II.     Claims 15, 20, 27, 36

Claims 15, 20, 27, and 36 include limitations similar to those of claim 1 and each is therefore believed allowable over the cited references for at least the reasons provided above.

Claims 15 and 20 recite data access systems "wherein when a file system client requests access to file information for a requested file, the file server determines a pair of storage elements for accessing the requested file, and returns to the file system client a first identifier of a storage element within the pair of storage elements that is to be accessed for reading data, and a second identifier of the master storage element of the pair of storage elements that is to be accessed for writing data, the determination being based upon use of storage elements within the system." Additionally, claims 15 and 20 provide that "write operations by the file system client are made using the first identifier and read operations by the file system client are made using the

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second identifier" and "data written to the master storage element is copied to the at least one mirrored storage element within each pair of storage elements." The cited references fail to disclose at least these elements.

Claims 27 and 36 recite methods for optimizing data access. The method of claim 27 includes "upon receiving a request for a requested file, determining a pair of storage elements for accessing the requested file, returning file access information including a first identifier of a storage element within the pair of storage elements that is to be accessed for reading data, and a second identifier of the master storage of the pair of storage elements that is to be accessed for writing data." The method of claim 36 includes "upon receiving a request for a requested file, determining a pair of storage elements for accessing the requested file based upon a usage level of its constituent storage elements, and forwarding to the client a first identifier of a storage element within the pair of storage elements that is to be accessed for reading data, and a second identifier of the master storage within the pair of storage elements for writing data thereby allowing the client to initiate I/O operations, absent the file server, to access the requested file." The cited references fail to disclose at least these elements.

## III. Claims 9-10, 25-26, 32-33

Applicants respectfully bring claims 9-10, 25-26, and 32-33 to the Examiner's attention. These claims variously recite limitations whereby the latest copy of data is retrieved either from a mirrored storage element or from the master storage element within the pair of storage elements to be accessed. It is respectfully submitted that these limitations are not disclosed by the cited references and, particularly, that they are not disclosed at col. 11, lines 3-23 of Brendel as stated in the Office Action. See, Office Action at ¶¶11-12.

For example, claim 9 recites "wherein if it is determined that a mirrored storage element is to be accessed for the requested file and the mirrored storage element which is to be accessed contains a latest copy of data for the requested file stored on the corresponding master storage element, the client directly retrieves the requested file from the mirrored storage element." The cited references do not disclose that a determination is made among storage

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elements within the pair of storage elements to be accessed as to which has the latest copy of data for the requested file.

Similarly, claim 10 recites "wherein if it is determined that a mirrored storage element is to be accessed for the requested file and the mirrored storage element which is to be accessed does not contain a latest copy of data for the requested file stored on the corresponding master storage element, the latest copy of data for the requested file stored on the corresponding master storage element is retrieved from the corresponding master storage element and then forwarded to the client." Again, as claimed, neither reference teaches that data is retrieved from a master storage element within a pair of storage elements if the mirrored storage element does not have the latest copy of data for the requested file. Reconsideration and allowance of claims 9-10, 25-26, and 32-33 is respectfully requested.

## IV.  Claims 13-14, 18-19, 23-24

Claims 13-14, 18-19, and 23-24 are amended to recite that the file server forwards a file allocation list for the requested file to the client. See e.g., Fig. 11. It is respectfully submitted that the cited references do not disclose forwarding a file allocation list to the client and that they therefore do not render these claims obvious. Accordingly, reconsideration and allowance of claims 13-14, 18-19, and 23-24 is requested.

## V.  Claims 2-7, 9-14, 16-19, 21-26, 29-35

Claims 2-7 and 9-14 depend from claim 1. Claims 16-19, 21-26, and 29-35 depend from claims 15, 20, and 27 respectively. Applicants respectfully submit that each dependent claim is allowable over the cited references for at least the reason that it depends from an allowable base claim in addition to its unique limitations. Reconsideration and allowance of the dependent claims is respectfully requested.

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## CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 858-350-6100.

Respectfully submitted,

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